Message

From: Brown, Cheryl A. [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DD6F8A562924439AAF97CA98DDAF1E10-BROWN, CHERYL]
Sent: 3/8/2016 6:00:06 PM
To: Labiosa, Rochelle [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ded3654216c9461d95cd5a3ceec507ef-Labiosa, Rochelle]; Fullagar, Jill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=7ba061353c314b40a14a8be1ee382ae3-Gable, Jill]; Cox, Michael [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=cddd6a5bb3c2477183799ef56cdb464f-Cox, Michael]; Cope, Ben [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=497efadd936e4d378225116b8f50fd3f-Cope, Ben]; Cora, Lori [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c8850941bf1540c796559dce75c2f5ee-Cora, Lori]; Jacobson, Martin [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8fafee20580b4afaa071e71ddcc088eb-Jacobson, M]
Subject: Location of Peterson pteropod data (where decline is observed) and historical information on pteropods

I found an error in the information I provided. The following sentence is incorrect.

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I obtained locational data for the NH-5 station. The NH-5 station is located 9.1 km from the shore (or ~5.6 miles), so there for the decrease in pteropods in Bill Peterson's dataset is outside of state waters. It is in fairly close proximity to Bednarsek Station 28.

Since I'm sure there are numerous copies of the document floating around I thought it best to just send this change.

In addition, I found some historic information regarding pteropods in Chapter 7 of the "Oregon Climate Change Assessment Report" on page 305 it states the following (source: http://occri.net/wp-content/uploads/2011/04/chapter7ocar.pdf):
"The pteropod *Limacina helicina* was present in more than half of the Oregon nearshore samples of Peterson and Miller (1976) , and was most abundant in May and June. Seasonal upwelling enhances the development of high acidity, corrosive waters in spring and summer, which might affect these marine snails". I have a copy of the Peterson and Miller (1976) paper and the data report which includes abundances of pteropods on the Newport hydrographic line.

In the data report (dated 1976) it states the following:
"*Limacina helicina* occurred in more the half of our samples from the nearshore zone. It was one of several zooplankton species that was most abundant and
occurred most frequently during the weak upwelling season of 1971.

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Deliberative Process / Ex. 5 statement from Juranek et al. (2009) **Deliberative Process / Ex. 5**

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"Preliminary examination of historical pteropod abundance data from the Oregon coast from the last 20 years (B. Peterson, unpublished data, 2009) indicates that pteropods are generally found where Upwelling water is not; their abundances are maximum in offshore waters outside of the upwelling region And peak over the shelf only during winter or El Nino events, when upwelling is suppressed."

Cheryl

From: Labiosa, Rochelle
Sent: Monday, March 07, 2016 3:00 PM
To: Brown, Cheryl A. <Brown.Cheryl@epa.gov>; Fullagar, Jill <Fullagar.Jill@epa.gov>; Cox, Michael <Cox.Michael@epa.gov>; Cope, Ben <Cope.Ben@epa.gov>; Cora, Lori <Cora.Lori@epa.gov>; Jacobson, Martin <Jacobson.Martin@epa.gov>
Subject: RE: Upwelling index info RE: Oregon Deliberative Process / Ex. 5 ssue Paper

Thanks Cheryl –the result (ie 2011 in the middle of the pack) is very comparable to the NOAA index data from the offshore location- but they are slightly different data. The attached is windstress strength, which is a good proxy, but wind angle also matters (and the upwelling index is supposed to reflect both). I think this figure would be fine to cite if it is what is typically used-

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From: Brown, Cheryl A.
Sent: Monday, March 07, 2016 2:36 PM
To: Fullagar, Jill <Fullagar.Jill@epa.gov>; Labiosa, Rochelle <labiosa.rochelle@epa.gov>; Cox, Michael <Cox.Michael@epa.gov>; Cope, Ben <Cope.Ben@epa.gov>; Cora, Lori <Cora.Lori@epa.gov>; Jacobson, Martin <Jacobson.Martin@epa.gov>
Subject: RE: Upwelling index info RE: Oregon Listing: Issue Paper
Importance: High

I forgot about this Oregon upwelling index. It is used very often in Oregon shelf papers.
Using it you can compare upwelling strength for different years:

http://damp.coas.oregonstate.edu/windstress/

This figure shows that 2011 is not anomalous. Might be able to just use this.
http://damp.coas.oregonstate.edu/windstress/allyears.html

I have the Harris paper (referenced in Rochelle's email) if anyone wants that one. I didn't include it in the citations because they only measure pCO2, so aragonite saturation state isn't calculated.

Cheers,
Cheryl

From: Fullagar, Jill
Sent: Monday, March 07, 2016 2:22 PM
To: Labiosa, Rochelle <labiosa.rochelle@epa.gov>; Brown, Cheryl A. <Brown.Cheryl@epa.gov>; Cox, Michael <Cox.Michael@epa.gov>; Cope, Ben <Cope.Ben@epa.gov>; Cora, Lori <Cora.Lori@epa.gov>; Jacobson, Martin <Jacobson.Martin@epa.gov>
Subject: RE: Upwelling index info RE: Oregon Listing: Issue Paper

Thanks Rochelle.
Marty—is this something you could help us with? Thanks.

jill

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From: Labiosa, Rochelle
Sent: Thursday, March 03, 2016 10:23 AM
To: Brown, Cheryl A. <Brown.Cheryl@epa.gov>; Cox, Michael <Cox.Michael@epa.gov>; Fullagar, Jill <Fullagar.Jill@epa.gov>; Cope, Ben <Cope.Ben@epa.gov>; Cora, Lori <Cora.Lori@epa.gov>
Subject: Upwelling index info RE: Deliberative Process / Ex. 5 Issue Paper

Hi All,

Deliberative Process / Ex. 5

Below is a link to PFEG data location – I downloaded daily from 45N 125W, which is a location off of Lincoln City, but there are other locations listed. I can pull in another site if needed, but this was the most central location for OR.
http://www.pfeg.noaa.gov/products/PFEL/modeled/indices/upwelling/NA/data_download.html

I also wanted to point you to this excerpt from the Bednarsek et al. paper, which is used to demonstrate that the 2011 upwelling/summer conditions were typical of the previous years (since 2007 based on data at Newport, OR and citations given)

The results for the 2011 cruise (figure 1a,c), which are representative of summertime conditions for the last few years, show evidence for corrosive water shoaling along the bottom to depths of about 20–50 m in the coastal waters off Washington, Oregon and northern California, and to depths of 60–120 m off southern California. The Washington–Oregon results are consistent with time-series measurements off Newport, Oregon, which provide evidence for increased fluctuations in Ωar (range: 0.8–3.8) on time-scales of weeks and very low saturation state waters during the upwelling season from June through to October [14,16]. From the moored saturation state and temperature observations from 2007 through to 2011, it is evident that the upwelling events primarily occur in the summer and early autumn months and last for approximately one to five weeks [14,16].

14=Harris KE, DeGrandpre MD, Hales B. 2013 Aragonite saturation state dynamics in a coastal upwelling zone. Geophys. Res. Lett. 40, 2720–2725. (doi:10.1002/grl.50460)CrossRefGeoRefWeb of Science
16= Evans W, Hales B, Strutton PG. 2011 Seasonal cycle of surface ocean pCO2 on the Oregon shelf. J. Geophys. Res. 116, C05012. (doi:10.1029/2010JC006625)CrossRef

Next thing up – I will be looking further at the SST data – I looked at the 4km and it is not high enough resolution, so now I am looking at the 1km data. Will keep you posted.

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From: Brown, Cheryl A.
Sent: Tuesday, March 01, 2016 1:37 PM
To: Cox, Michael <Cox.Michael@epa.gov>; Fullagar, Jill <Fullagar.Jill@epa.gov>; Labiosa, Rochelle <labiosa.rochelle@epa.gov>; Cope, Ben <Cope.Ben@epa.gov>; Cora, Lori <Cora.Lori@epa.gov>
Subject: RE: Oregon Listing: Issue Paper

Looks like a great outline to me.

Here are some minor revisions.

Cheryl

From: Cox, Michael
Sent: Tuesday, March 01, 2016 11:29 AM
To: Fullagar, Jill <Fullagar.Jill@epa.gov>; Labiosa, Rochelle <labiosa.rochelle@epa.gov>; Cope, Ben <Cope.Ben@epa.gov>; Brown, Cheryl A. <Brown.Cheryl@epa.gov>; Cora, Lori <Cora.Lori@epa.gov>
Cc: Cox, Michael <Cox.Michael@epa.gov>
Subject Deliberative Process / Ex. 5 Issue Paper

I took what I heard yesterday, incorporated Cheryl's input, and incorporated Ben's initial comments into an initial draft of an issue paper for the Deliberative Process / Ex. 5

Prior to filling in the blanks, I wanted to make sure people were okay with the outline.

I was thinking this would be the briefing paper for OWW management.

The second page is just a to-do list for us.

Please get comments back to me and then we can discuss how to move forward.

Thanks.

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